DOCUMENT RESUME

ED 337 141 IR 015 128

TITLE Take A Trip Reference Manual: An Authoring and Storage System for Designing and Sharing Challenging Curriculum.

INSTITUTION Minnesota State Dept. of Education, St. Paul. Evaluation Section.

PUB DATE 88

NOTE 31p.; For use with HyperCard for the Macintosh Plus, SE, II.

PUB TYPE Guides - Non-Classroom Use (055)

EDRS PRICE MF01/PC02 Plus Postage.

DESCRIPTORS Academically Gifted; *Authoring Aids (Programing); *Computer Managed Instruction; *Curriculum Design; Elementary Secondary Education; *Hypermedia; *Instructional Design; Microcomputers; *Teacher Developed Materials

IDENTIFIERS Apple Macintosh

ABSTRACT

The Take a Trip program is an authoring and storage system for designing challenging curriculum. Using the power of hypermedia, specifically Apple Computer's HyperCard, Take a Trip provides course file stacks, help stacks, and personalized learning plan stacks. Designed to assist the user when new units are written, the help stacks provide an introduction to the system as well as information on curriculum design, writing tips, a sample course, and a template. The sample course stacks assist the designer by providing a comprehensive approach to instruction in a flexible format, and the personalized learning plan stacks provide a step-by-step process which directs the user to explore existing course files and outcomes to construct a personalized plan for an individual or a small group of students using the copy and paste features of the HyperCard system. All of the course stacks are arranged in the same way: basic course data form, group investigation activities, partner packets, side trips, research activities, thinking excursions, applied imagination, and evaluation. This program is based on the idea that the use of microcomputers and instructional design may help teachers explore patterns of curriculum design in individual courses. The manual is designed to aid educators in creating course stacks, writing a new course, examining course files, recording and tracking student work, designing curriculum for the gifted and talented, and sharing work with peers through electronic mail. (14 references) (DB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☐ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

ED332141

TAKE A TRIP Reference Manual

An authoring and storage system for designing and sharing challenging curriculum.

IR015128

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

J. P. Graba

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

For Use With HyperCard™ For The Macintosh Plus, SE, II

HyperCard is a registered trademark of Apple Computer, Inc.

E400 b

Minnesota Department of Education

BEST COPY AVAILABLE

Acknowledgements

Chief Authors of Take A Trip:

Sarah J. Smith, Program Specialist in Gifted Education
Minnesota Department of Education

Renie Willard, District Coordinator of Gifted and Talented
St. Paul Schools, MN

Course File Authors and Reviewers:

Elaine Chirhart, Becker Schools, MN
Ivy Church, Cook County Schools, MN
Linda Epperson, South Washington County Schools, MN
Maureen Flanagan, St. Paul Schools, MN
Linda Johnson, Moorhead Schools, MN
Dorothy Noud, St. Paul Schools, MN
Lynn Prom, Moorhead Schools, MN
Virginia Rubbright, South Washington County Schools, MN
Palma Sirr, Apple Valley-Rosemount Schools, MN
Elaine Swanson, St. Paul Schools, MN
Katherine Unger, Apple-Valley Rosemount Schools, MN

Programmed by:
Sarah J. Smith and Al Lundquist
Minnesota Department of Education

Take A Trip Reference Manual
Sarah J. Smith, Minnesota Department of Education

The TAKE A TRIP system is a project of the Minnesota Department of Education. Funding for this project was provided through the "Courseware Recovery Fund," established by the Minnesota legislature to promote systematic buying and distribution of technological products to Minnesota schools.

Ruth E. Randall, Commissioner
Minnesota Department of Education

James Sauter, Assistant Commissioner
Division of Educational Effectiveness
Minnesota Department of Education

Gilbert Valdez, Manager
Instructional Design Section
Minnesota Department of Education

TAKE A TRIP
© Minnesota Department of Education, 1988.
All rights reserved.

TAKE A TRIP
Reference Manual

An authoring and storage system for designing and sharing challenging curriculum.

For
Use
With
HyperCard ®
For
The
Macintosh
Plus, SE, II

HyperCard is a registered trademark of Apple Computer, Inc.

The Minnesota Curriculum Services Center is supported by the State of Minnesota Department of Education and the State Board of Vocational Technical Education. The MCSC does not discriminate on the basis of race, color, creed, religion, sex, national origin, marital status, status with regard to public assistance or disability.

MINNESOTA CURRICULUM SERVICES CENTER
3554 White Bear Ave White Bear Lake MN 55110
(612) 770-3943 800-652-9024

Table of Contents

Chapter 1: The TAKE A TRIP System

1 Welcome Aboard!
1 Actions
2 Take A Trip System Stacks
3 Help Stacks
4 Course Stacks
4 Personalized Learning Plan Stacks
5 Getting Started

Chapter 2: How to Examine Course Files

7 Introduction
7 Description of Course Categories

Chapter 3: Creating Your Own Course Stack

Chapter 4: How to Write a New Course

13 Writing Steps
13 Choosing Course Categories
14 Management Strategies
15 Saving and Printing Your Work

Chapter 5: How to Record and Track Student Work

17 Personalized Learning Plan
18 Writing a Personalized Learning Plan
18 Goals, Objectives, Outcomes

Chapter 6: Curriculum Design Theory For The Gifted and Talented

19 Introduction
20 Content
21 Process
22 Questioning Strategies
23 Product Modification
24 Evaluation of Student Products
25 References

Chapter 7: Sharing Your Work with Others

27 Introduction
27 Electronic Mail

Appendix:

29 "Generic" Learning Center

Chapter 1

TAKE A TRIP

AN AUTHORING AND STORAGE SYSTEM FOR DESIGNING CHALLENGING CURRICULUM

Introduction

Welcome Aboard!

The TAKE A TRIP program is an authoring and storage system for designing challenging curriculum. Using the power of HyperCard® (HyperCard is a registered trademark of Apple Computer, Inc., Cupertino, CA), TAKE A TRIP provides sample course stacks and helpful information stacks on curriculum design and recording and tracking student work.

You the designer, will find that TAKE A TRIP helps match good ideas with important elements of a quality curriculum. Sample course stacks using the TAKE A TRIP system assist the designer by providing a comprehensive approach to instruction in a flexible format.

The TAKE A TRIP program is based on the idea that challenging curriculum may be shared through the use of technology. The patterns of curriculum design may be recognized as individual courses are examined. Patterns can be copied, modified and shared with others. An important addition to the TAKE A TRIP program is the wealth of information on curriculum design stored on the Help stacks located on the Reference disk.

Designers are invited to browse through sample course stacks and examine how others have developed challenging courses. Course stacks may be shared with others by exchanging data disks. By examining the work of others and creating your own course stacks, the students will truly be challenged to TAKE A TRIP!

Actions

What are the basic uses of the TAKE A TRIP system?

The TAKE A TRIP system allows the user to:

A. examine sample Course stacks
B. develop new Course stacks
C. examine Help stacks for information and quick access to writing tools
D. design and track student work using a Personalized Learning Plan stack

Take A Trip System

Course File Stacks

Sample courses are organized into the following categories:

- Course Data Form and Management System
- Group Investigation Activities
- Partner Packets
- Side Trips
- Research Activities
- Thinking Excursions
- Applied Imagination
- Evaluation

Help Stacks

Authoring tools assist the user when new units are written.

Personalized Learning Plan Stacks

A plan for a student or a small group of learners with similar characteristics may be developed using the Outcomes and Course stacks.

How are stacks organized in the Take A Trip system?

There are three types of stacks: Help, Course and Personalized Learning Plan stacks.

HELP STACKS

HELP STACKS

Help stacks are stored on a Reference disk and are described below:

TAKE A TRIP

This stack introduces the TAKE A TRIP system and serves as the connecting link to the Course, Help and Personalized Learning Plan stacks. Choices are offered to direct the user to the basic operations of the TAKE A TRIP system. Users are invited to:

1. continue with the introduction
2. view and revise sample Course stacks
3. develop new course stacks using a Course Template
4. design and track student work using a Personalized Learning Plan Template
5. examine Help stacks for information and quick access to *Curriculum Design, Course Categories, Writing Tips* and the *Sample Course.*

CURRICULUM DESIGN

Curriculum Design describes the characteristics of challenging curriculum and provides examples of instructional strategies designed to provide enrichment and acceleration opportunities to all students.

WRITING TIPS

A step-by-step process to be used when designing a new instructional unit is outlined. How courses are organized using the TAKE A TRIP system is described. Curriculum design theory is applied to the construction of new activities.

The user is guided in the process of developing new units which are organized around important concepts.

The design of student-centered tasks which challenge thinking is explained. A variety of student products designed to complement differences in learning style are listed. A template or formatted stack is provided for use when designing new course stacks.

COURSE CATEGORIES

This stack explains the organization of the TAKE A TRIP system so that the methods of student organization and the types of student activities may be easily located.

SAMPLE COURSE

This stack provides the user with the opportunity to select a sample course titled Ah, Wilderness! which illustrates the use of a variety of instructional strategies to create a challenging instructional unit.

TEMPLATE

A Template stack is provided so that the entry and retrieval of student-centered activities using a template is simplified. All course stacks share a common language system and student-centered activities may be located quickly. This language system is described in the file titled Course Categories.

COURSE STACKS

COURSE STACKS

Course stacks are stored on the Course Files disk and are organized in the following categories:

1 Basic Course Form and Management System (Loop)
2 Group Investigation Activities
3 Partner Packets
4 Side Trips
5 Research Activities
6 Thinking Excursions
7 Applied Imagination
8 Evaluation

PERSONALIZED LEARNING PLAN STACKS

PERSONALIZED LEARNING PLAN STACKS

How To Write A Personalized Learning Plan

A step-by-step process is described which directs the user to explore existing course files and outcomes to construct a personalized learning plan using the copy and paste features of the HyperCard system.

PLP.Tem

PLP.Tem (Personalized Learning Plan Template) is a computer worksheet to record and store individual student plans.

PLP.Sample

PLP.Sample (Personalized Learning Plan Sample) is an example of a plan for "Sarah" who is a very talented writer. A summary of her strengths and a plan for encouraging her writing abilities is described.

Outcomes

Outcomes are identified for subject areas that will challenge the gifted and talented learners and provide examples of challenging enrichment or extension activities for all students.

Getting Started

The directions provided in this manual are based on two assumptions:

1. You are familiar with your Macintosh® computer (registered trademark of Apple Computer, Inc. Cupertino, CA) and you know how to use the mouse and the menus.

2. You are familiar with HyperCard and you have the HyperCard system software which must be used with the TAKE A TRIP stacks.

Consult your Macintosh and HyperCard manuals for detailed directions on the operation of the Macintosh computer and the HyperCard software.

Before proceeding to examine the TAKE A TRIP stacks, make a back-up copy of both the Reference and Course Files disks.

1. If you have a hard drive, copy the Trip stacks onto your hard drive and create a "Take A Trip!" folder.

2. If you have two disk drives, place the HyperCard system in drive 1 and the Reference disk in drive 2. Be prepared to do some "disk switching" when you select a choice which is stored on the Course files disk.

3. Open the Reference disk and click twice on the stack titled TAKE A TRIP.

4. Create a button on your home stack by copying the button on the TAKE A TRIP stack which appears on the last page of the stack. Follow these steps:

Press Open Apple and space bar

Pull down the Go menu and select Home

Press Open Apple 4"and change the user level to "authoring"

Under the File menu, select Open stack

Select TAKE A TRIP

Proceed to the last card by clicking on the right arrow icon

Under Tools, select the button icon

Click once on the Trip button

Press "Open Apple Copy (C)

Under the Go menu, highlight Home and release

Use the Open Apple Paste (V) command and use your cursor to place the Trip button on your home stack

Under Tools, select the hand icon

Press Open Apple 4 and change the User Level to typing.

Try out your new button.

Chapter 2

How to Examine Course Files

1. Insert HyperCard system in drive 1 and the Course Files disk in drive 2

2. Select a course title

3. Click on Open

All TAKE A TRIP course stacks are arranged in the same way and use the same "language" system to store challenging courses.

Description of Course Categories

Basic Course Data Form and Management System

BASIC COURSE DATA FORM

The is the title card for your course. The information requested on this form includes: title, author, school district, subject area, grade level designation, date and learner outcomes. Space is also provided for additional information. These sections are titled Teacher Notes and References.

The Management System or Loop is a recommended sequence of instruction. The Loop page offers a way for the teachers to organize student choices. These choices may be presented in a learning center (see the drawing in the appendix of the TAKE A TRIP Reference Manual), written on a bulletin board, or included in a student packet. The Loop may be used to direct students to activities or may be ignored.

Group Investigation Activities

GROUP INVESTIGATION ACTIVITIES

Activities which require students to work together in groups are written to this section of the course. This may include a research assignment, a problem solving task, or a discussion of an important question. Each of these activities may involve content, process or product modification.

See the "Elements" file, Elements of Curriculum Design, for information. The main reason to write an activity in this section is to support cooperative group efforts.

Partner Packets

PARTNER PACKETS

PARTNER PACKETS are organized to facilitate learning in pairs. Students may discuss a story, develop a booklet, or prepare a presentation to the class. In many cases, organizing students to work in pairs supports and enhances the social and intellectual skills of students as they collaborate on their work with a peer.

For example, students may be asked to role play a conflict between two characters from a story they have just read.

Side Trips

SIDE TRIPS

The SIDE TRIP is a solo journey for the independent learner. Choices are written to this section to accommodate a wide variety of interests in content and products. SIDE TRIPS reinforce independent learning by allowing individuals to choose an activity and complete an investigation on his or her own.

For example, a student may select an activity which requires him or her to investigate buildings of historical importance in the community.

Research Activities

RESEARCH ACTIVITIES

The focus of activities written to this section require students to expand their knowledge in the depth and breadth of a subject (content modification). The primary emphasis is on gathering information and designing student tasks which require critical thinking.

For example, students may be asked to research the changing patterns of immigration from the first colonists to the 1980's and to summarize these trends on a chart.

Thinking Excursions

THINKING EXCURSIONS

Activities which are written to this section involve tasks which reinforce a thinking skill (process modification). An example of a thinking skill might be to develop fluency. Fluency describes the students' ability to think of many ideas. Students may be asked to list many types of transportation systems in two minutes.

The Thinking Excursion is a brief activity which relates to the general theme or topic of a course and involves higher order thinking. Generally, excursions can be accomplished in a relatively short period of time.

Applied Imagination

APPLIED IMAGINATION

Activities which require students to produce original products are organized in this section (product modification). If the focus of the activity requires students to design an object, invention, composition, or computer program, it is stored in this section.

Students who wish to develop technical skills in a product format, such as videotape, will choose an activity stored in the applied imagination section.

Evaluation

9 EVALUATION

This section represents the evaluation component of the course. Students may evaluate the activities in a general way with open-ended questions, or may be asked to complete a final task for evaluation.

Now that you have examined several Course stacks, you may wish to write a new course of your own. Proceed to the next chapter for directions.

Chapter 3

CREATING YOUR OWN COURSE STACK

Don't loose your stack!

1. Insert the HyperCard system in drive 1 and the Reference disk in drive 2

2. Locate the Template stack and select Open

3. Under the File menu, select Save a copy

4. Rename the Template stack and save

5. Under the File Menu, select Open stack and select your new file. (This protects you from accidentally writing over your Template stack which is identical.)

6. Under the Edit menu, select Cut card and delete the directions for making your own stack. You will want to delete the first two cards in your new stack.

7. When you see the course card with the icons for each course category, delete "Course Title" which appears at the top of the card and insert the title of your new course.

Now you are ready to begin creating your own stack.

Chapter 4

HOW TO WRITE A NEW COURSE

1. Select a topic which will extend the "core" curriculum to challenge students. Plan to add extensions to an existing unit or replace an existing unit with a more challenging one.

2. Review the CURRICULUM DESIGN card available from the Help stack stored on the Reference disk.

Writing Steps

Review Writing Tips (Select Help)

3. Write lesson ideas which include important concepts, processes and products. During the writing process you may wish to jump to the help stacks on the TAKE A TRIP Reference disk which provide examples of challenging lessons by clicking on the file folder label titled Writing Tips. Writing Tips contains lists of higher order thinking process verbs, product ideas and examples of elaborated content.

When you are ready to return to your new course stack, use the Open stack command found under the File menu and select the title of your stack.

4. Decide how to organize the lesson ideas. A quick review of the course categories will assist you. The teacher strives for balance by providing opportunities for students to work as group members, partners or independent learners.

In addition, the teacher may also want to communicate to students about the different types of activities. Some of the activities will focus on the acquisition of knowledge, others on the production of new knowledge. All of the activities are written to challenge the critical and creative thinking abilities of students. A description of these choices appears below:

Choosing
Course Categories

CHOOSING COURSE CATEGORIES

HOW DO YOU WANT TO ORGANIZE STUDENTS FOR LEARNING USING THE TAKE A TRIP SYSTEM?

Group Work? Select GROUP INVESTIGATION ACTIVITIES

Partner Work? Select PARTNER PACKETS

Individual Work? Select SIDE TRIPS

HOW DO YOU WANT TO INFORM THE STUDENT ABOUT THE FOCUS OF THE ACTIVITY USING THE TAKE A TRIP SYSTEM?

Information about unit including: author, title, subject area(s), learner outcomes? Select COURSE DATA FORM

Exploration of content, depth and breadth? Select RESEARCH ACTIVITIES

Opportunity to extend student thinking through challenging questions or tasks which may be completed in a brief time period? Select THINKING EXCURSIONS

Opportunity to do "hands-on" design work? Select APPLIED IMAGINATION

Evaluation of student work or input on the course activities? Select EVALUATION

The categories listed above provide for two important dimensions: the types of activities a student may prefer and the possibility of working alone or with others. In most cases, the decision is purely arbitrary and an activity may fit into several categories. You may use several or all of the course categories to organize your unit.

5. Enter the student-centered activities you have created in one of the course categories. Use these activities to develop an individual, small or large group plan.

Management Strategies

MANAGEMENT STRATEGIES

6. Make a decision about how students are to progress through the activities using the Loop. The Loop provides a way for teachers to organize student activities in a learning center or a packet. The Loop allows the teacher to write out the directions and establish a sequence for the instructional activities.

For example:
A. Select a GROUP INVESTIGATION ACTIVITY
B. Take a SIDE TRIP
C. Choose any activity from the learning center
D. Check with Ms. Smith

You may wish to organize the activities in a student packet, a learning center or through a list of choices presented to the class. See the Appendix for a copy of a "generic" learning center for TAKE A TRIP.

SAVING AND PRINTING YOUR WORK

7. Your work is automatically saved when you use the HyperCard system.

8. Make a back-up copy of your stack by selecting the Save a copy command found in the File menu.

9. Print your activities by selecting Print a card located in the File menu. Only the activities which are shown on the screen will be printed.

10. Print the entire stack by returning to the front card of your Course stack and clicking on the printer button.

11. Share your work with others.

Chapter 5

How to Record and Track Student Work

1. Insert the HyperCard system disk in drive 1.
2. Insert the Reference disk in drive 2
3. Select the Personalized Learning stack.

Personalized Learning Plan

PERSONALIZED LEARNING PLAN

A Personalized Learning Plan may be developed for an individual or small group of learners who display similar characteristics. The PLP should include the following information:

A. Description of educational achievement or potential

B. Assessment of need and recommendations for development of individual strengths related to student interests

C. A statement of goals/objectives/outcomes

D. Evaluation procedure and periodic review

The "PLP.Tem" is an electronic worksheet designed to assist you in developing a plan to serve highly able students. Click on the PLP. Tem label to examine the template. Return to the Personalized Learning Plan stack to examine a sample plan.

You may wish to examine the PLP.Sample stack to see how the stacks on the Reference disk (Outcomes) and the Course stacks (Ah,Wilderness!), were used to develop an individualized plan. Personalized learning plans may be developed by recording information about individuals or small groups of learners with similar characteristics and then retrieving activities and outcomes from the TAKE A TRIP system.

This process involves retrieving, copying to the clipboard and pasting the information into the appropriate section on the PLP.Tem. Outcomes is a stack of challenging gifted and talented learner outcomes by subject area. The Course stacks assist the designer by providing a selection of challenging activities. This combination of stacks provides a database of choices to tailor instruction to individual student needs.

Although a personalized learning plan may not be required for individual students, the PLP does provide a way to organize, plan and record modifications of an instructional program for an individual or small group. You may wish to create a new stack which may be called the Unit lesson plan. You may do this by consulting your HyperCard manual.

Writing a Personalized Learning Plan...

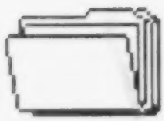
1. Click on PLP.Tem

2. Click on New student records

3. Under the File menu, select Save a copy

4. Rename the PLP.Tem stack and save.

5. Under the File Menu, select Open stack and select your new stack. This protects you from accidentally writing over your Template stack which is identical.



Goals
Objectives
Outcomes

6. You are now ready to write a personalized learning plan. You may wish to examine the Outcomes file and select an appropriate outcome(s). Copy the outcomes to the clipboard using the Open Apple Copy (C) command. Move to our personalized learning stack for an individual student by selecting the Open stack command from the File menu. Copy the information from the clipboard to your stack using the Open Apple Paste (V) command.

In the same manner, move to the course files and select activities which may meet the needs of an individual learner or small group of learners with similar characteristics. Write new activities. Once you have learned to move in the system and you become familiar with the stacks, a PLP may be developed very quickly.

Remember...the purpose of the PLP is to tailor instruction to individual strengths by developing challenging student-centered activities.

Chapter 6

Curriculum Design Theory for the Gifted and Talented

Introduction

1. Insert the HyperCard system in drive 1
2. Insert Reference diskette in drive 2
3. Select Trip Help and Open

The Help stacks provide information about curriculum design and then move the user into the writing process. Examine the Curriculum Design file to understand the basic theory of the TAKE A TRIP system. Next, select How to write a new unit and identify the steps in writing student-centered activities. Select Template and write your own Course stack.

ELEMENTS OF CURRICULUM DESIGN

Introduction

The ticket to understanding curriculum design is to understand the operations of the mind. Dr. J.P. Guilford, a psychologist, developed a model of the intellect in 1959. According to Guilford (Maker, p. 88 1982), intelligence has three facets or dimensions: 1) content or information 2) mental operations and 3) products.

James Gallagher (1985) emphasized designing challenging activities through the emphasis of content, process and learning environment. Joseph Renzulli (1986) contributed to emphasis on student products. Content is the information that is to be learned. Processes are the mental operations students are expected to use. Products are the end result of the interaction of the content and process.

Howard Gardner (1987) advanced the theory of a multiple view of intelligence. This view describes the many areas in which intelligence may be observed or applied in domains such as the visual and performing arts or in leadership. According to Sternberg (1987), intelligence is observed when problems are recognized and solved in novel settings.

The impact of this theory on currriculum design has resulted in an increased emphasis on the use of a variety of instructional strategies and the design of student-centered activities which are likely to capitalize on the varied strengths and talents of individuals. Multiple "product" choices for students are emphasized and increased support for a wide variety of talents such as artistic, creative or social intelligence is evident.

Although the psychologists have provided educators with several views of intelligence, the application of this theory to the design of curriculum is the work of educators.

Many individuals have contributed to this application of theory to curriculum design and have been greatly influenced by Guilford's model as well as the work of more recent psychologists.

Using Guilford's model of the intellect when designing challenging curriculum, the "core" curriculum must be appropriately advanced to challenge students. Modifications are made in content, process and products. These modifications show how Guilford's model may be the base for curriculum design which goes beyond the basics, toward a curriculum of relevance, involvement and challenge. It is a first-class ticket to quality education for all students.

Content

CONTENT

CONTENT INTRODUCED AT AN EARLIER AGE describes the idea that students are able to understand the important concepts of a discipline at an earlier age when appropriate language and examples are used. Jerome Bruner (1973) advocated this notion when he described the importance of organizing information around important principles and themes.

For example, when students are studying about dinosaurs, they should be introduced to the idea of extinction.

IMPORTANT THEMES OR PRINCIPLES can be identified by asking the question, "Why teach this?" Content to be learned should be unified by important themes, issues, problems or principles, which have application to other areas of study (Kaplan as cited in Renzulli, p. 185, 1986).

For example, a study of the American revolution may be organized around the theme of change.

EXPANDED CONTENT refers to the in-depth study of a subject. It meets the need of the learner to become an expert in an area of deep interest. Digging deeper causes the learner to readjust the mental file folders of his or her mind and provides a broad understanding of important concepts.

For example, in addition to the study of farming, some students may be ready to learn about agricultural issues or explore new efforts to "farm" the ocean.

INTERDISCIPLINARY CONTENT provides for the connection and application of themes, issues or principles to a variety of subject areas. This simulates the real-world experiences of students where the application of many disciplines to a study or solution of a problem is necessary. As a result, students are able to define a concept, list its attributes, and generalize to other applications.

For example, the theme of heroes and heroines may be studied in history, art, literature or political science.

OPPORTUNITY FOR STUDENT CHOICE supports the need of students to make some decisions about their learning. This may mean a choice within a subject area or topic. It may also mean an occasional side trip out of the "regular" curriculum to explore an area of high interest. Dr. Joseph Renzulli, developer of the Enrichment Triad Model (Renzulli,1986), promotes the importance of student choice in independent study.

For example, a student may choose to explore the homeless when the city is studied or a student may request the opportunity to study the homeless after viewing a television documentary.

Process

PROCESS

PROCESS refers to the mental operations required to think critically and creatively about important content. Foundational knowledge is required before students can think at a higher level.

EMPHASIS ON HIGHER PROCESSES THROUGH STUDENT TASKS AND QUESTIONING STRATEGIES refers to the design of activities which require students to take an idea apart (analysis), develop a new thought (synthesis), and judge the value of an idea (evaluation). Dr. Benjamin Bloom (1956) developed a description of these skills in his "Taxonomy of Cognitive Objectives." The six levels are: knowledge, comprehension, application, analysis, synthesis and evaluation. Although there are many "thinking skill" programs and taxonomies, an understanding of Dr. Bloom's taxonomy will assist the writer in designing challenging curriculum. Tasks which require higher order processes often combine an important concept, a higher order process verb and a product.

For example, the student will design a bus tour of his or her community after conducting research on important historical landmarks.

To encourage students to think creatively, Dr. Frank Williams (as cited in Renzulli, p. 468, 1986) identified four thinking processes which should be encouraged: fluency, flexibility, elaboration, and originality . Dr. Williams believed that a child's full potential in thinking and feeling should be developed.

The affective behaviors to be encouraged are: curiosity, risk-taking, complexity (delving into complex problems) and imagination. It is important that the tasks and the questions asked should generate many responses and encourage students to take a chance when they work to answer a difficult question or conduct original research.

Questioning Strategies

QUESTIONING STRATEGIES

Well-designed questions may also challenge students. The design of good questions relies on the ability of the teacher to locate important concepts and pose questions which engage the students' interest and require them to formulate a response supported with evidence or explanation.

Good questions...

1. require foundation knowledge
2. are open-ended, yet focused
3. are provocative

4. are likely to produce a variety of responses

5. are likely to bridge to other content areas and real-life situations.

For example, "How is it that the United States is the richest country in the world and yet there are citizens who are still hungry?"

INSTRUCTION OF THINKING SKILLS refers to a very purposeful step out of a subject area to teach the content of thinking. For example, the teacher identifies a process, such as drawing a conclusion, defines it and simulates the process. Later, the students and the teacher together reflect on exactly what occurred and how this might be applied to other settings.

The next step is to bridge the skill to the subject area and apply it to a problem. Finally, the students consider how they might use the skill of drawing a conclusion in their personal lives. A second instance of the instruction of a thinking skill occurs naturally when students are creating original products.

For example, a student may need to learn the process of drawing a conclusion after the completion of his or her research. The teacher coaches the student when it is evident that the learner needs the introduction or reinforcement of a skill.

USE OF PROFESSIONAL THINKING AND PROCEDURES refers to the idea that the best way to learn about a subject is to act as professionals do in the field. Jerome Bruner (1962), an educator and theorist, believed that students should be introduced to the "thought" systems of a discipline.

For example, the student may act as a journalist by gathering information and writing a story. This requires the student to write in a journalistic style and think as reporters do.

Product

PRODUCT

The next step is to design challenging product choices for students. Products are the end result of student interaction with the content and the processes.

MASTERY OF KEY CONCEPTS PLUS INSIGHT REPRESENTED refers to the requirement that student products should represent original thinking. These products are more than a mere summary of information. It is a requirement that the student think deeply about his or her learning and communicate this insight in a meaningful way.

For example, after investigating new immigrants, the student must transform this information symbolically and represent the idea. The student product might be the design of a monument to the new immigrants of today.

COMMUNICATION OF INSIGHT THROUGH AN IDEA, PROCESS, OR CREATION expands the notion of student product to include new theories, a new way to do something or an invention.

For example, students might make a model of how a moon colony might look in the future. Students might demonstrate how a mathematical process might be used to solve a new problem. Lastly, students might invent a new product, such as an indestructible phone booth to solve the problem of vandalism.

TRADITIONAL OR NON-TRADITIONAL IN FORMAT refers to the idea that there are many ways to communicate effectively. Dr. Joseph Renzulli (1986) emphasizes the need for students to act as independent investigators and share their products with audiences. This allows the gifts and talents of students to surface in a variety of domains.

For example, essays and drawings are traditional academic products. An unusual product might be a display of geometric forms under black light.

Evaluation of Student Products

EVALUATION OF STUDENT PRODUCTS

To evaluate these products, criteria should be established for both the content and the format of the product. For example, if students write an article for the newspaper, the following criteria might apply:

Criteria for the Content:

Was the important information included in the story?

Was the information accurate?

Were the sources adequate?

Criteria for the Format:

Was the story written in journalistic style?

Was the information organized with the five w's (who, what, where, when and why)?

Did the headline grab the attention of the reader?

Students do not acquire the technical skills to develop a product without the assistance and coaching of the teacher. Just as teachers instruct in the methods of writing a research paper, they should also teach the procedures necessary to develop a quality product. To ensure that more than just surface production occurs, it is important to set criteria for both the content and the product format.

The teacher refers to the criteria in an ongoing process of evaluation. The teacher responds to the student with "on the spot" side trips designed to assist students with the difficult process of communicating an idea in a chosen format. As the student organizes information, synthesizes research, and develops a way of communicating his or her idea, the thought systems of professionals are used.

OPPORTUNITY FOR STUDENT CHOICE allows for the full development of talent in a student's preferred style. This does not mean that traditional academic products are ignored in a school setting; it does mean that there is room for both traditional and non-traditional products. Students may freely select their own products or may select from a teacher-developed set of choices.

References

References for Further Study

Baron, J. B., & Sternberg, R. J. (1987). *Teaching thinking skills.* New York: W. H. Freeman.

Bloom, Benjamin S., (Ed.) (1985). *Developing talent in young people.* New York: Ballantine Books.

Chance, Paul. (1986). *Thinking in the classroom: A a survey of programs.* New York: Teachers College Press.

Davis, Gary A., & Rimm, Sylvia B. (1985). *Education of the gifted and talented,* Englewood Cliffs, NJ: Prentice Hall.

Dunn, Kenneth and Dunn, Rita. (1978). *Teaching students through their individual learning styles.* Reston,Virginia: Prentice Hall, Inc.

Jones, Beau Fly, Palincsar, Anna Marie Sullivan, Ogle, Donna Sederburg and Carr, Eileen Glynn (Eds.). (1987.) *Strategic teaching and learning: cognitive instruction in the content areas.* Alexandria, Virginia: Association for Supervision and Curriculum Development.

Kaplan, Sandra. (1987) *Developing competencies related to a differentiated curriculum for the gifted and talented.* Office of Ventura County Superintendent of Schools.

Perkins, D. N. (1981). *The mind's best work.* Cambridge: Harvard University Press.

References

Bloom, Benjamin S. (Ed.) (1956) *Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain.* New York: Longmans, Green and Co.

Gallagher, James. (1985) *Teaching the gifted child.* Boston: Allyn and Bacon, Inc.

Gardner, Howard. (1983.) *Frames of mind: The theory of multiple intelligences.* New York: Basic Books, Inc.

Maker, C. June. (1982). *Teaching models in the education of the gifted.* Rockville, MD: Aspen Systems.

Renzulli, J. S. (Ed.) (1986). *Systems and models in developing programs for the gifted and talented.* Mansfield Center, CT: Creative Learning Press.

Sternberg, Robert J. (Ed.) (1984.) *Mechanisms of cognitive development.* New York: W. H. Freeman and Co.

Chapter 7:

Sharing Your Work with Others

Files may be shared through disk swapping or "porting" your file across an electronic network. If you wish to share your work through the Minnesota Department of Education, mail a copy of your course file to:

Minnesota Department of Education
Take A Trip Program
Sarah J. Smith
664 Capitol Square
St. Paul, MN 55101

Advanced Utilities

E-Mail

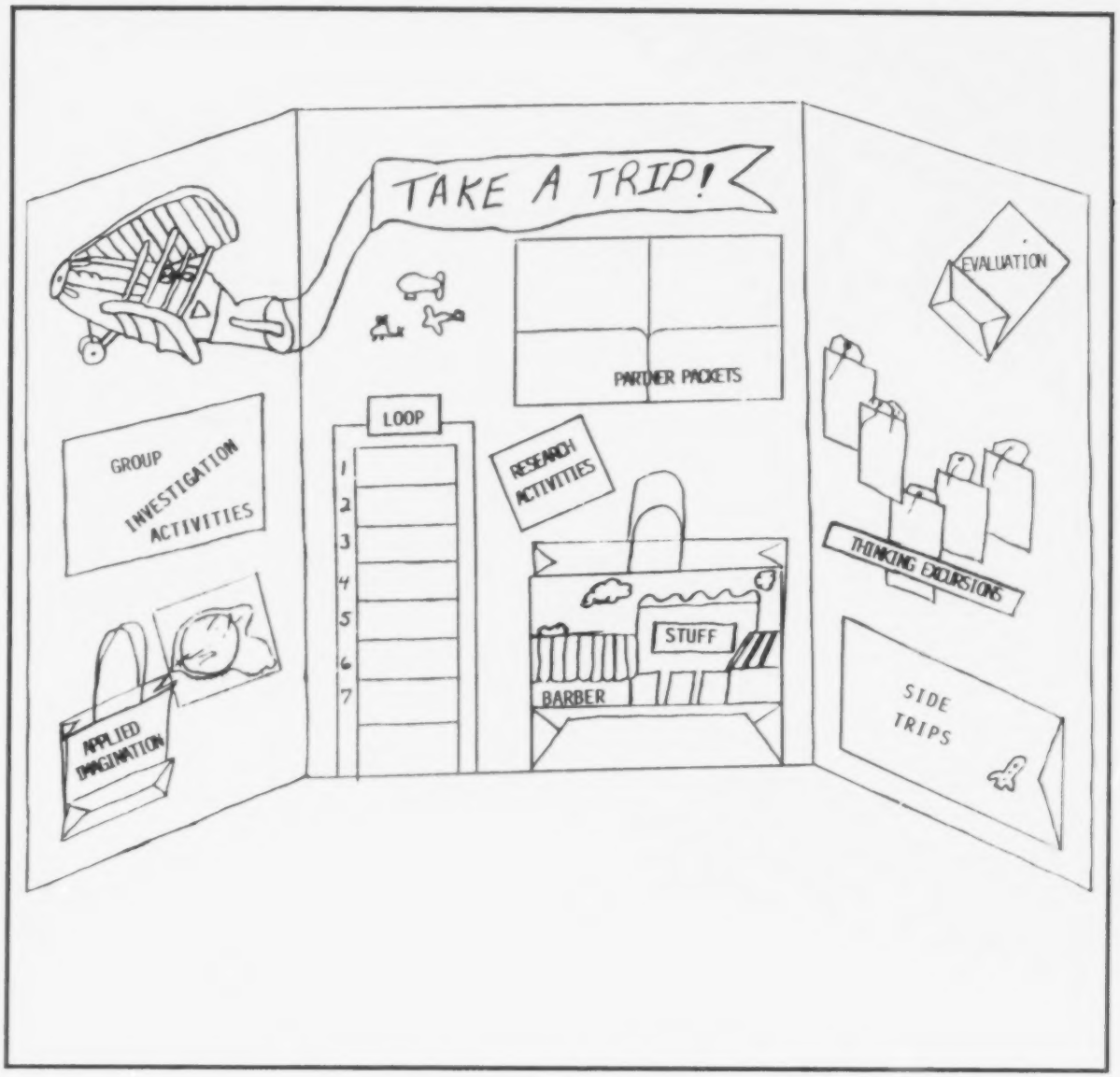
If you would like to port your file across an electronic bulletin board, follow the directions provided by your electronic host. File transfer will be added to MDE Net in the near future.

If you would like to communicate by electronic mail, send your ideas to:

SSmith on the Mix network or to any other member of your electronic bulletin board.

TAKE A TRIP!

Appendix



Learning Center
Design
By
Dorothy Noud